



SUPPLEMENTARY 2012/2013

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UNIVERSITY OF SWAZILAND

SUPPLEMENTARY EXAMINATION PAPER

**PROGRAMMES: BACHELOR OF SCIENCE YEAR II IN AGRICULTURAL
AND BIOSYSTEMS ENGINEERING, AGRICULTURAL
EDUCATION, AGRONOMY, ANIMAL SCIENCE,
ANIMAL SCIENCE DAIRY OPTION, AND
HORTICULTURE.**

COURSE CODE: CP 201

TITLE OF PAPER: INTRODUCTORY SOIL SCIENCE

TIME ALLOWED: TWO (2) HOURS

INSTRUCTIONS: ANSWER ANY FOUR (4) QUESTIONS

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BY THE CHIEF INVIGILATOR**

QUESTION 1

Define or give short descriptions of the following terms: (Each question carries **2 marks**)

- (i) Weathering
- (ii) Cation exchange capacity
- (iii) Disintegration
- (iv) Illuviation
- (v) Soil structure

(b) Define the term “soil horizon” and indicate how horizons are identified and named in a soil profile? **[5]**

(c) Using an appropriate diagram, illustrate the major horizons in a representative mineral soil profile and describe the properties of each. **[10]**

QUESTION 2

(a) What is a factor of soil formation? **[5]**

(b) Discuss the factors of soil formation and comment on how they have influenced soil formation in your country **[20]**

QUESTION 3

(a) Describe the various ways that soil colloids obtain negative charges **[7]**

(b) Discuss the properties of clay minerals which are important when soils are used for crop production **[18]**

QUESTION 4

(a) Define the term “mechanical analysis” **[5]**

(b) Describe in detail a method of doing a mechanical analysis of a soil. **[15]**

(c) What value is mechanical analysis data? **[5]**

QUESTION 5

- (a) Discuss the acid-infertility of soils **[18]**
- (b) What strategies would you recommend to increase plant growth in acid soil **[7]**

QUESTION 6

- (a) Distinguish between “soil structure” and soil texture” **[5]**
- (b) Discuss the strategies you would recommend to improve or maintain the structure of a soil. **[20]**